some reports of shedding rather badly. In Oklahoma progress and condition were fair to good, but warm, dry weather was needed in some parts where shedding was reported. In Texas the drought was broken, except in parts of the southwest and lower coast sections, where the crop made poor advance; elsewhere conditions were generally favorable and progress was fair to very good.

Miscellaneous crops.—Pastures made mostly satisfactory advance east of the Mississippi River during the month, and in the Great Plains area good to excellent condition was noted. Ranges in the Rocky Mountain area did well, except that in the more southern part and also in the Southwest there was need of moisture, and ranges were generally dry west of the mountains. Except for some local interruption, haying made good advance. Livestock continued to do well.

Potatoes did well generally, except that, at the close, they were reported blighting badly on Long Island, and some slight blight was indicated in the eastern Ohio Valley. Truck crops did well rather generally. Sugar cane made excellent advance in Louisiana and sugar beets did well, although at the close of the month they needed rain in Utah. Tobacco curing progressed well in the Southeast, and good advance was made elsewhere. Citrus grew well during the month, and deciduous fruits made normal growth, but there were complaints that peaches were rotting and dropping in parts of the Southeast toward the end of the month.

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

NORTH ATLANTIC OCEAN

By F. A. YOUNG

Judging from reports received up to time of writing, July was one of the quietest months on record over the North Atlantic, as only 10 vessels have forwarded storm reports, with a maximum wind force of 9. There was only one well-developed disturbance of any intensity during the month, and this originated in the first decade, and will be described later. Under these conditions it was not considered advisable to publish the usual charts.

As is often the case during a month of moderate weather, fog was unusually prevalent. Over the steamer lanes, west of the twentieth meridian, fog was reported on from 14 to 27 days, the latter number occurring in the 5° square between the fortieth and forty-fifth parallels and sixty-fifth to seventieth meridians.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, 8 a. m. (seventy-fifth meridian), North Atlantic Ocean, July, 1928*

Stations	Average pressure	Departure [1]	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Julianehaab, Greenland	29.80	([2])	30.24	29th	29.36	6th.
Belle Isle, Newfoundland	29.83	−0.04	30.22	13th	29.46	20th.
Halifax, Nova Scotia	29.96	+0.04	30.24	14th	29.70	29th.
Nantucket	29.97	−0.01	30.24	31st	29.72	23d.
Hatteras	30.03	+0.01	30.24	31st	29.86	6th.
Key West	30.04	+0.03	30.12	25th	29.98	19th.
New Orleans	30.04	+0.04	30.14	29th [3]	29.96	11th.
Cape Gracias, Honduras	29.90	0.00	29.94	5th [3]	29.80	18th.
Turks Island	30.09	+0.08	30.18	24th	29.90	1st.
Bermuda	30.22	+0.11	30.36	12th [3]	30.04	23d.
Horta, Azores	30.24	−0.03	30.46	8th [3]	29.96	30th.
Lerwick, Shetland Islands	29.78	−0.02	30.19	16th	29.44	29th.
Valencia, Ireland	30.12	+0.14	30.49	16th	29.76	27th.
London	30.10	+0.12	30.44	17th	29.67	28th.

[1] From normals shown on Hydrographic Office Pilot Chart based on observations at Greenwich mean noon, or 7 a. m., seventy-fifth meridian.
[2] No normal available.
[3] And on other dates.

On the 1st and 2d an area of low pressure was off the north coast of Scotland, and on the latter date land stations in the British Isles reported southwest winds of force 7, although all reports that have been received from vessels in the vicinity give moderate winds.

On the 5th and 6th there was a second LOW in nearly the same location, and on the 5th low pressure also occurred over the Straits of Belle Isle; both LOWS were accompanied by moderate weather.

From the 7th to 11th the only disturbance of any extent during the month covered the eastern section of the steamer lanes; this reached its greatest force on the 10th when moderate south to southwesterly gales prevailed over the area between the forty-fifth and fifty-fifth parallels and the fifteenth to thirtieth meridians.

From the 12th to the 30th, while there were depressions over different sections of the ocean, moderate weather was the rule, and during this period winds of over force 6 were rare.

On the 31st the American S. S. *McKeesport* encountered a northeasterly gale, as shown by report in table. The storm area was evidently very limited, as other vessels near by reported moderate winds.

Note.—Am. S. S. *Pennsylvanian*, Capt. A. C. Keene; observer, J. M. Mikkelsen, Charleston to New York. July 8, 8 a. m., seventy-fifth meridian time, in 33° 50′ N., 74° 56′ W. Sea smooth, weather cloudy, St.-Cu. 6, barometer 30.09 inches, air 80°, wet bulb 78°, water 76°, visibility fair. Observed a large waterspout drawing water, about 6 to 7 miles to eastward, that lasted about 15 minutes. The upper part was a short and broad solid column with a narrow white streak in the center. In the middle it was broken and the lower part was more hazy and appeared as if water were splashing out to each side. A heavy rain squall followed about half an hour later. Rest of day was fine and clear.

OCEAN GALES AND STORMS, JULY, 1928

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN			° ′	° ′				*Inches*					
Coamo, Am. S. S.	San Juan	New York	33 43 N.	70 57 W.	July 1	4a, 1	July 1	30.00	WSW.	SW., 4	SW.	—, 8	
Winnebago, Br. S. S.	Shields	do	57 48 N.	15 39 W.	8	5a, 8	9	29.40	SSW.	SSW., 7	WSW.	SW., 8	SSW.–W.
Mississippi, Br. M. S.	London	Boston	48 10 N.	24 22 W.	9	Noon, 9	10	29.92	SW.	SW., 7	WNW.	SW., 9	Steady.
Kerhonkson, Am. S. S.	Manchester	New York	51 06 N.	18 49 W.	9	4p, 10	10	29.72	S.	S., 8	SSW.	S., 8	S.–SSW.
American Farmer, Am. S. S.	London	do	47 08 N.	27 08 W.	9	Noon, 10	10	29.82	SW.	SW., 8	W.	SW., 8	SW.–W.
City of Alton, Am. S. S.	Rotterdam	do	43 06 N.	42 54 W.	21	—, 22	22	29.84	SW.	SW., 8	W.	SW., 8	SW.–W.
Do	do	do	41 14 N.	56 30 W.	24	—, 25	25	29.74	SSW.	WNW., 7	W.	SSW., 8	SSW.–W.
McKeesport, Am. S. S.	Havre	do	49 40 N.	15 40 W.	31	4a, 31	31	29.62	NE.	NE., 5	NE.	NE., 9	NE.–NNW.
NORTH PACIFIC OCEAN													
Hanoi, Fr. S. S.	Gulf of Tonkin.	Hong Kong	20 00 N.	110 00 E.	15	Noon, 15	15	29.06		W., 12		W., 12	
Makaweli, Am. S. S.	Hawaii	San Francisco	37 20 N.	124 12 W.	18	Midt, 18	19	29.93	NW.	NW., —	NW.	NNW., 8	Steady.
Cellina, It. M. S.	San Francisco	Panama	13 95 N.	92 12 W.	20	—, 20	20	29.74	N.	N., 12	N.	N., 12	Do.
Los Angeles, Am. S. S.	Los Angeles	Balboa	13 31 N.	93 44 W.	22	2a, 22	22	29.90	E.	E., 8	E.	E., 8	Do.
Induna, Br. S. S.	Vancouver	Boston	20 20 N.	107 00 W.	28	4p, 28	29	29.86	SE.	SE., —	SE.	SSE., 12	SE.–SSE.
Pres. Harrison, Am. S. S.	Honolulu	Kobe	32 20 N.	141 05 E.	29	Midt, 31	Aug. 1	28.73	E.	S., 2	N.	SE., 11	E.–S.–N.
SOUTH PACIFIC OCEAN													
Makura, Br. S. S.	San Francisco	Sydney	36 00 S.	158 00 E.	7	1a., 7	July 7	29.26	SSE.	SSW., 11	WSW.	SW., 11	SSW.–WSW.
Do	Sydney	San Francisco	28 20 S.	166 49 W.	19	1a., 20	20	29.54	ENE.	NE., —	NE.	—, 10	ENE.–N.

NORTH PACIFIC OCEAN

By WILLIS E. HURD

The North Pacific high-pressure area off the coast of California continued strongly developed throughout July and with no cyclones entering upon its boundaries.

The Aleutian cyclone, frequently absent at this time of year, was central over Bering Sea, lowest average pressure determined being 29.72 inches, at St. Paul, Pribilof Islands. For the entire Aleutian region, however, pressures were considerably below normal, as will be observed in the following table:

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean, July, 1928*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Dutch Harbor [1] [2]	29.78	−0.24	30.10	9th	29.36	28th.
St. Paul [1] [3]	29.72	−0.13	30.18	3d [7]	29.24	29th.
Kodiak [1] [3]	29.83	−0.13	30.28	25th	29.32	18th. [7]
Midway Island [1] [4]	30.10	+0.02	30.22	7th [7]	29.90	29th.
Honolulu [5]	30.03	+0.01	30.14	2d	29.88	20th.
Juneau [5]	30.02	−0.03	30.33	24th	29.60	3d.
Tatoosh Island [5] [6]	30.04	−0.03	30.17	12th	29.71	3d.
San Francisco [5] [6]	29.93	−0.02	30.07	23d	29.77	19th.
San Diego [5] [6]	29.91	+0.02	30.06	22d	29.81	27th.

[1] P. m. observations only.
[2] For 29 days.
[3] For 27 days.
[4] For 28 days.
[5] A. m. and p. m. observations.
[6] Corrected to 24-hour mean.
[7] And on other date or dates.

The weather over all the Pacific Ocean, except for a few coastal localities, was remarkable for its utter absence of storms, however mild, a condition rarely met with even during the calmest of the summer months. The only extratropical gale reported occurred about 100 miles west of San Francisco on the afternoon of the 18th, when a northwesterly wind of force 8 was experienced by the American steamer *Makaweli* on the eastern edge of the permanent anticyclone.

The prevailing wind at Honolulu continued from the east, but the maximum wind velocity, at the rate of 29 miles an hour, was from the northeast, on the 26th.

In portions of the Tropics the weather was more or less disturbed. At least two typhoons occurred in the Far East, and in addition many LOWS in more or less weak stages of development traversed the waters of this region.

The first typhoon seems to have originated as a shallow depression about the 8th, near 15° N., 134° E. On the 12th it had increased in energy and lay off the east coast of Luzon. On the 13th and 14th it crossed the China Sea, still gathering intensity, and on the 15th burst as a dangerous storm with hurricane winds over the Gulf of Tonkin. The French steamer *Cap Lay* was wrecked at the entrance to the Haifong River and many of her passengers were lost, while numbers of small junks and other craft were lost. Capt. J. L. Cruchot, of the French steamer *Hanoi*, in a report to the Weather Bureau, said his vessel and others rode out the hurricane, which lasted from 11 a. m. to 5 p. m., in an anchorage off the northern end of the island of Hainan. He noted that much damage was done on shore in the general vicinity.

The second typhoon was discovered on the 24th, near 16° N., 142° E. On the 28th, in 24° N., 139° E., it was identified as a deep cyclone moving toward Japan. On the 29th it was central near 25° N., 141° 30′ E., and on the 30th, near 32° N., 140° E., advancing slowly upon Honshu. Press reports of August 2 from Tokyo said that the storm raged over the islands for three days, and that it was the worst in 18 years over Honshu, floods and high winds causing some loss to life and property damage amounting to many millions of dollars. At midnight of July 31 the American steamer *President Harrison*, in 32° 20′ N., 141° 05′ E., had a minimum pressure reading of 28.73 inches, highest wind velocity, force 11, from east-southeast, southeast, and north.

In the American tropics moderate to violent gales occurred on the 20th and 22d off the Guatemalan coast, and on the 28th and 29th off the Mexican coast, near Cape Corrientes, full hurricane forces being reported on the 20th and 28th. No unusual depression of the baro-